

Amendments to the Claims

Claim 1 (**Currently Amended**) A permanent magnet field small DC motor comprising:

a soft-magnetic frame; and

an arc-shaped permanent magnet fixed in a said soft-magnetic frame,

wherein said magnet is provided with an outer surface of said arc-shaped permanent magnet at both ends of said arc-shaped permanent magnetic in a thrust direction that fits fit along an inner surface of said soft-magnetic frame, and a certain region middle regions of said outer surface of said arc-shaped permanent magnet in a middle part in the thrust direction of said magnet at both ends of said arc-shaped permanent magnet in the a circumferential direction and between said outer surface at said ends in the thrust direction are recessed with respect to said outer surface at said ends in the thrust direction where said soft-magnetic frame does not function as a back yoke.

Claim 2 (**Currently Amended**) The permanent magnet field small DC motor of claim 1, further comprising:

another arc-shaped permanent magnet, said arc-shaped permanent magnet and said another arc-shaped permanent magnet being a pair of arc-shaped permanent magnets; and

a pair of springs,

wherein a said pair of arc-shaped permanent magnets are disposed opposing opposing to each other in said soft-magnetic frame are disposed in the soft-magnetic frame with the said outer surfaces surface at both said ends in the thrust direction fitting along the said inner surface of the said soft-magnetic frame, and said arc-shaped permanent magnets are fixed at both said ends in the circumferential direction using a spring said springs, respectively.

Claim 3 (**Currently Amended**) The permanent magnet field small DC motor of claim 2, wherein the said arc-shaped permanent magnets are comprise a compression molded from material of rare earth iron based melt-spun flakes and a binder.

Claim 4 (**Currently Amended**) The permanent magnet field small DC motor of claim 2, wherein ~~a maximum thickness of the said arc-shaped magnets are~~ have a maximum thickness of 1 mm or less.

Claim 5 (**Currently Amended**) The permanent magnet field small DC motor of claim 1, wherein ~~a certain air-gap is provided between the outer surface of the arc-shaped permanent magnet in the middle part in the thrust direction at both ends in the circumferential direction and the soft-magnetic frame~~ clearances are formed between said middle regions of said arc-shaped permanent magnet and said soft-magnetic frame.

Claim 6 (**Currently Amended**) The permanent magnet field small DC motor of claim 3, wherein ~~a curvature of the outer surfaces said middle regions of the said arc-shaped rare earth permanent magnets in the middle part in the thrust direction is made to be different from that of an outer surface at both ends in a thrust direction in a compression mold~~ said outer surface at said ends of the arc-shaped permanent magnets in the thrust direction so that the said soft-magnetic frame does not function as a back yoke at the region of the outer surface in the middle part in the thrust direction at both ends in the circumferential direction said middle regions.

Claim 7 (**Currently Amended**) The permanent magnet field small DC motor of claim 1, further comprising another arc-shaped permanent magnet, said arc-shaped permanent magnet and said another arc-shaped permanent magnet being a pair of arc-shaped permanent magnets wherein a pair of arc-shaped rare earth magnets opposing to each other fixed along the said inner surface of said soft-magnetic frame opposing each other, wherein said arc-shaped permanent magnets exhibit ~~exhibits~~ different demagnetization curves at least by unsaturated magnetization.

Claim 8 (**Currently Amended**) The permanent magnet field small DC motor of claim 5, further comprising another arc-shaped permanent magnet, said arc-shaped permanent magnet and said another arc-shaped permanent magnet being a pair of arc-shaped permanent magnets, wherein a distribution of flux density in the gap with the armature iron core is controlled by once magnetizing a pair of said arc-shaped rare earth permanent magnets opposing to oppose ~~each other and are fixed~~

~~along the said inner surface of said soft-magnetic frame, and each of said arc-shaped permanent magnets has a and then providing an initial demagnetization by heat so that a rate of demagnetization that increases along with a distance from a center of a magnetic pole towards the ends said ends in the circumferential direction, eventually making whereby the rate of demagnetization rate reaching the is greatest at the air-gap formed between the middle part of the outer surface in the thrust direction at both ends said middle regions in the circumferential direction and the said soft-magnetic frame.~~

Claim 9 (**Currently Amended**) An optical pickup device comprising:

a permanent magnet field small DC motor comprising a soft-magnetic frame; and

an arc-shaped permanent magnet fixed in a said soft-magnetic frame,

~~wherein said magnet is provided with an outer surface of said arc-shaped permanent magnet at both ends of said arc-shaped permanent magnet in a thrust direction that fits fit along an inner surface of said soft-magnetic frame, and a certain region middle regions of said outer surface of said arc-shaped permanent magnet in a middle part in the thrust direction of said magnet at both ends of said arc-shaped permanent magnet in the a circumferential direction and between said outer surface at said ends in the thrust direction are recessed with respect to said outer surface at said ends in the thrust direction where said soft-magnetic frame does not function as a back yoke.~~

Claim 10 (**New**) The permanent magnet field small DC motor of claim 1, wherein said middle regions are planar.

Claim 11 (**New**) The optical pickup device of claim 9, wherein said middle regions are planar.